UNIVERSITY OF TARTU

Faculty of Social Sciences

School of Economics and Business Administration

TUBA BÜŞRA ÖZSOY

THE LINK BETWEEN POVERTY AND TRADE OPENNESS DEPENDING ON THE EXPORT PRODUCT NATURE IN DEVELOPING COUNTRIES

Master's thesis

Supervisor: Priit Vahter

Tartu 2019

Name and signature of supervisor…….

Allowed for defence on …….

(date)

I have written this master's thesis independently. All viewpoints of other authors, literary sources and data from elsewhere used for writing this paper have been referenced.

.....

(signature of author)

Abstract

While Neo-liberal views put great emphasis on trade in developing countries suggesting that economic growth led by trade would benefit the poor, there is mixed evidence in the literature regarding the gains from trade. Given the inconclusive results in the literature, this paper narrows the research question a bit and investigates if the impact of trade openness on poverty depends on different *export product nature* such as the export product diversification and the export product composition. Using cross-country and time-series data for 41 developing countries from 1995 to 2016, this paper reached the conclusion that trade openness can both benefit and harm the poor in developing countries depending on the *export product nature* where trade is likely to worsen poverty if the export product concentration is high and trade is likely to reduce poverty if the share of high technology exports is high.

SECTION I.
INTRODUCTION

The first of the Sustainable Development Goals (SDG) established in the 2030 Agenda for Sustainable Development (United Nations, 2015) is ending the extreme poverty by 2030 for all people everywhere. The Neo-liberal views promoted by the international agencies like World Trade Organization (WTO) underlines the poverty reducing potential of trade openness in developing counties mainly through the economic growth and the comparative advantage of developing economies in products that are relatively intensive in less-skilled labor as it is typically the less-skilled labor who tends to face the poverty. (World Trade Organization, 2015) On the other hand, based on the UNCTADSTAT database, in 2017 the export growth of the Least Developed Countries (LDC) were % 16.44 while the export growth of developed economies were % 8.84 and yet the extreme poverty remains as a very challenging problem especially for the LDCs among developing countries. The empirical evidence on the impact of the trade openness on poverty is unfortunately not a clear cut as some studies (Krueger, 1983; Bayar and Sezgin, 2017; Heo and Doanh, 2009) had findings suggesting the pro-poor power of greater trade while some studies did not reach very clear conclusions. (Ravallion, 2004; Harrison, 2007)

The mixed empirical evidence of the literature led some studies (Le Goff and Singh, 2014; Santos- Paulino, 2017) to further investigate whether the impact of trade openness on poverty may depend on particular conditions. Of course there are likely to be many factors that may affect the poverty such as trade openness, human capital level and the institutions. The contribution of the study of Le Goff and Singh (2014) is that in addition to these explanatory variables they investigate if the impact of trade openness on poverty depends on particular complementary factors. Focusing on 3 complementary factors; *financial deepening*, *human capital level* and the *governance* they reach the conclusion that greater trade openness has a poverty reducing effect only if the financial performance, the education level and the governance is greater; otherwise trade openness seems to increase the poverty.

As Le Goff and Singh (2014) found out the explanatory power of *financial deepening (private credit/GDP), human capital level (education)* and the *governance* (*bureaucracy quality)* in explaining the impact of trade openness on poverty, there might be other complementary factors which motivated this research paper to further investigate the impact of "export product nature". The goal of this paper is to investigate whether the impact of trade

openness on poverty depends on the *nature of export products* or not. Despite the studies investigating the nature of export, the focus has been given to economic growth rather than poverty. (Cuaresma and Wörz, 2005; Augustin Kwasi Fosu, 1990; David Greenaway, Wyn Morgan and Peter Wright, 1999) The concern of this study is poverty rather than growth. Furthermore, the studies investigating the nature of export product seems to focus on *what* is the export products and thus the focus has been given to the export product composition. On the other hand, controlling for all the other explanatory factors, the impact of trade openness on poverty may give different results for two identical countries where one of them has exports that are highly concentrated on a few products and the other one with exports that are more homogeneously distributed over a range of different products. Thus, the novelty of this study is referring to two dimensions of the export nature and investigating whether the impact of trade openness on poverty depends on the *export product composition* as well as the *export concentration* in a panel of 41 developing countries from 1995 to 2016. The rest of the paper is organized as follows: Section II discusses the existing literature as well as the core trade theories linked to trade and poverty issue. Section III describes the data and methodology. Section IV presents the empirical result and the conclusion.

SECTION II.

THE DISCUSSION OF THE EXISTING LITERATURE

A. Literature Within The Theoretical Framework

Unlike the Ricardian trade model (Ricardo,1817) where the differences in technology is the driving source of comparative advantage and thus trade, the Heckscher-Ohlin model introduced by Eli Heckscher (1919) and Bertil Ohlin (1933) assumes that countries have the identical technology but different factor abundance and thus this different factor abundance is the driving source of trade. The Stolper-Samuelson theorem (1941) that was derived from the Heckscher-Ohlin trade model suggests that an increase in the relative price of the capital intensive good would lead to an increase in the real return of capital owners and a decrease in the real return of labor. Putting it differently, an increase in the relative price of a product that requires unskilled labor will increase the real wage of the unskilled labor and decrease the real wage of skilled labor. Putting the Heckscher-Ohlin trade model and Stolper-Samuelson theorem together suggests that countries can gain from trade by trading the product that they are abundant in. Since the developing countries are typically abundant in products that require less

skilled labor, the theory suggests that trade openness is likely to benefit the poor in developing countries. The Neo-liberal views promoted by the World Bank (WB) and World Trade Organization (WTO) also make great use of the comparative advantage of developing countries in horticultural products and natural resource endowments to argue that trade openness could be pro-poor (World Bank, 2004; World Trade Organization, 2015).

As well as the Neo-liberal views, Heckscher-Ohlin trade model and Stolper-Samuelson theorem have been used as a theoretical support to argue that trade openness would be pro-poor in developing countries (Krueger, 1983) while on the other hand the literature has mixed empirical evidence on the impact of trade openness on poverty. There are couple of strong assumptions of the Heckscher-Ohlin trade model why the empirical evidence may not support the findings suggested by the theory. Firstly, trading partners are not likely to have *identical technology* especially considering the international trade taking place between developed and least developed countries (LDC). Secondly, as assumed by the theory, labor and capital may not always be completely mobile across industries within the country especially considering that the economies of the LDCs are still highly dependent on agriculture and thus the mobility of labor to another sector than agriculture may not be so easy. Furthermore due to globalization the assumptions of immobile labor and capital across countries and homogeneous labor and capital are not likely to be the case in real life. The goods that are imported for instance are quite different from the same type of goods that are domestically produced. They differ in factor input composition as well as the quality of the products. (Davis and Mishra, 2007) Lastly, if the poor is completely unskilled and if the products the economy is abundant in requires some degree of skilled labor such as semi-skilled then the gains from trade openness may bypass and even worsen the poor. (Le Goff and Singh, 2014) Despite the great use of the Ricardian trade model and the Heckscher-Ohlin theory as a theoretical support by number of studies claiming that the poor in developing countries can also gain from trade by exploiting their comparative advantage or factor abundance in unskilled labor and thus specialization (Krueger, 1983) there has been critics pointing out the disadvantages of developing countries in specializing on products that are unskilled labor intensive. (Harrison, 2007) In addition, specialization of developing countries is likely to bring high export product concentration for these countries and high export concentration might be more risky for these countries compared to developed countries. Because if there is price instability of the products that their exports are concentrated in, then developing counties may suffer to even greater extent than developed ones as they do

not have the same level of human capital or institutions and thus high export concentration and specialization of developing economies may make them more vulnerable to global shocks.

In addition to the *price channel* that has been put forward by Stolper-Samuelson theorem, another channel through which trade openness is likely benefit the poor is through *economic growth* which is often emphasized by the international bodies promoting the Neo-Liberal views. (World Trade Organization, 2015) From this perspective, strong economic growth in developing countries is seen as a key source to end poverty and trade is seen as the ultimate enabler of growth. Although growth can be unequalizing, it has to be very strongly so if it is to increase absolute poverty. (Winters and McKay, 2004) Despite these views, empirically the poverty reducing impact of greater trade through economic growth is not clear-cut as it will be discussed in the Empirical Literature part of this paper.

B. Empirical Literature

As mentioned above, theoretical framework suggests that countries can gain from trade by trading the product that they are abundant in. On the other hand, empirically there is strong evidence on the "curse of natural resources" where countries with great natural resources tend to grow more slowly than resource-poor countries. (Sachs and Warner, 2001) However; Norway- one of the world's largest oil exporters is an exception to it. Larsen (2006) investigates how Norway managed to escape the curse. For instance, Norway used the Factor Movement Policy- using the centralized wage formation system to limit general wage increases at the magnitude of productivity increases in the manufacturing sector. On the other hand, for developing and least developed countries (LDC), the labor shift may harm the manufacturing sector which is often associated with the productivity and growth. The study also reveals that social norms, a social contract, transparency, and rule of law played an important role in explaining how Norway escaped the curse. (Larsen, 2006) This suggests that the discovery of the natural resource might become a curse for the societies where the institutions, financial development and governance are weak. Additionally, in societies where the institutions, governance and fiscal policies are weak there might be the lack of proper fiscal policies to redistribute the income and thus the discovery of the natural resource may bypass the poor.

Despite the promotion of economic growth as one of the key sources to end poverty in developing countries as mentioned in the previous part, the literature shows that the impact of trade openness on poverty through growth is still not clear. Ravallion (2004) points out that one

concern regarding this issue is whether great trade volume leads to growth or growth leads to greater trade volume and even if there is growth, it is not clear if inequality will stay unchanged as a result of growth since if it is the non-poor who is gaining from the growth, it might not affect the poor at all. In line with that, the findings of Ravallion (2004) suggests that greater trade openness does not necessarily mean lower poverty in developing countries. Regarding the relation between trade and growth, Frankel and Romer, (1999) also acknowledge the endogeneity issue and for this reason they suggest to benefit from the gravity model of trade where one would take geography as an instrumental variable since geography is strongly correlated with trade while it is not likely to affect income directly. Using the gravity model, they do not reach any conclusion suggesting that the positive correlation between trade and income is because countries with greater income trade more. Their findings does not only confirm that trade increases income but also suggests that it happens through the accumulation of physical and human capital and by increasing output for given levels of capital. The second issue concerned by Ravallion (2004) was whether growth will benefit the poor at all. The finding of Dollar, Kleineberg and Kraaj (2016) where they study 121 both developing and advanced economies with large cross-country data set is that growth will help the poor on average, although they acknowledge the challenge of pointing out a particular policy that would help only the poor. So despite the sceptic view of Ravallion (2004) on growth-poverty link and the endogeneity issue of trade, the results of Frankel and Romer (1999) and Dollar, Kleineberg and Kraaj (2016) putting together suggest that growth still is valid channel which through trade openness is likely to reduce poverty.

The table below provides the key articles that have been found relevant and useful for this paper referring to trade openness as both *trade volume* (sum of exports and imports as a share of GDP) and *trade policies* such as tariffs or quotas as a measure of trade openness and employing *poverty headcount* and *poverty gap* as measures of poverty incidence.

Table 1. Studies that have been found relevant

AUTHOR	**COUNTRIES STUDIED**	**DATA / METHODOLOGY**	**OBJECT OF THE STUDY**	**FINDINGS**
Maëlan Le Goff and Raju Jan Singh (2014)	30 African countries	Pooled cross-country and time series data, using the System Generalized Method of Moment (GMM) estimator.	Examining the impact of trade openness on poverty taking into account if this relation depends on other factors by introducing three interaction terms in their regression.	Trade openness worsens the poverty; however if the education levels are higher, if governance and financial development improves this relation of trade openness on poverty is reversed.

Martin Ravallion (2004)	Developing countries, China and Morocco	**Macro view**: Cross-country comparison. **Micro view**: Aggregate time series analysis for China and Morocco.	Examining the relationship between trade openness and poverty.	Greater trade openness does not necessarily mean lower poverty in developing countries
Ann Harrison (2007)	Developing countries	Cross country analysis using OLS and IV	Examining the globalization and poverty relation.	There is no evidence in the aggregate data that trade reforms are good or bad for the poor
Yoon Heo and Nguyen Khanh Doanh(2009)	Vietnam	The channels through which trade liberalization affects poverty has been focused.	Examining the impact of trade liberalization on poverty in Vietnam through the channels which trade affects poverty.	Trade liberalization helps reducing the poverty through mainly growth and relatively stable inequality.
David Dollar, Tatjana Kleineberg, Aart Kraaj(2016)	121 countries which are both developing and advanced economies .	Large cross- country dataset: database of the World Bank for the developing countries and the Luxembourg Income Study (LIS) data for advanced economies.	Examining the linkage between the growth and the poor.	Growth will help the poor on average.
Jeffrey A. Frankel and David Romer, (1999)	Very large set of various countries	The gravity model of trade	Examining the linkage between trade and growth.	Trade has a quantitatively large and robust, but only moderately statistically significant, positive effect on income.
Jesús Crespo Cuaresma and Julia Wörz(2005)	45 industrialized and developing countries	Random effects model using an instrumental variables estimator	Examining further the impact of export on growth by taking into account the export components as well.	Exports in sophisticated industries (R&D intensity) has greater impact on growth.
Augustin Kwasi Fosu(1990)	64 developing countries	Ordinary Least Squares (OLS)	Examining further the impact of export on growth comparing manufacturing exports versus primary sector exports.	The positive impact of export on GDP growth is likely to be due to the manufacturing content of the export.
David Greenaway , Wyn Morgan & Peter Wright(1999)	69 both low income and high income countries.	Generalized Method of Moment (GMM) after first differencing.	Examining further the impact of export on GDP per capita growth, taking into account the disaggregated export products.	Not only greater export leads to greater GDP per capita growth but also exporting different types of products has an impact.

Amelia U. Santos- Paulino (2017)	76 developing countries	Panel data using System Generalized Method of Moment (GMM) estimator.	Examining the impact of trade specialization on poverty.	Manufacturing exports contribute to poverty reduction in developing countries while for low income countries agriculture exports have a more significant impact.

The study of Heo and Doanh (2009) confirms the growth channel leading to poverty reduction by their case study in Vietnam where the trade liberalization helped to reduce the poverty mainly through growth and relatively stable inequality. Although their findings are consistent with the findings of Frankel and Romer, (1999) and Dollar, Kleineberg and Kraaj (2016), these three points should be paid attention to: i) Heo and Doanh (2009) refer to the reduction of barriers as well as trade volume for the trade openness while Frankel and Romer, (1999) do not include the trade policies such as trade barriers. ii) The study of Dollar, Kleineberg and Kraaj (2016) includes both developing and the advanced economies while the finding of Heo and Doanh (2009) represent solely the case for Vietnam. iii) Together with growth, the stable inequality in Vietnam is an important factor explaining the poverty reduction in Vietnam. So while the literature seems to provide evidence in that trade openness would lead to poverty reduction through growth, the two issues introduced by Ravallion (2004) earlier are still worth considering. On the other hand there are studies with no significant effect of trade openness on poverty. (Harrison, 2007; Singh and Huangh, 2011) Although Ann Harrison (2007) does not study directly the relation between trade openness and poverty, she investigates the globalization-poverty linkage where she takes international trade as a measure of globalization. She makes great emphasis on the data limitations and the measurement issues. She points out that using only trade volume defined as the sum of exports and imports as a share of GDP might be problematic due to the endogenous nature of trade volume since trade volume is likely to be determined by other factors such as trade policies, geography, country size and macro-economic policies. Thus she takes both trade volume and average tariffs. Another issue she points out is that as trade openness is likely to be endogenous, finding the right instrument for trade policy is very challenging and as mentioned earlier by Ravallion (2004) even if trade openness leads to growth, whether this growth will benefit the poor or not is not clear. As a result, she finds no evidence in the aggregate data that trade reforms are good or bad for the poor. Similarly, Singh and Huangh (2011) focusing on Sub –Saharan African countries from 1992 to 2006 with 5

years-averaged data do not find any significant effect of trade openness on poverty while on the other hand financial deepening seems to be associated with less poverty.

Key Complementary Factors

The mixed evidence of trade openness on poverty leads one to consider that there might be other factors determining poverty in addition to trade openness. Such factors can be institutions, financial deepening, property rights, governance and human capital. (Acemoglu and Robinson, 2013; Huang and Singh, 2011; Le Goff and Singh, 2014) Although most of the studies do include a set of control variables such as GDP per capita and inflation accounting for the other factors that might affect poverty, there are far less studies considering that the impact of trade openness on poverty might be determined by other factors. By including three interaction terms in their regression that are *financial deepening, human capital level* and the *governance,* Le Goff and Singh (2014) go beyond the usual approach and investigate the non-linarites between trade openness and poverty by examining if the impact of trade openness on poverty depends on these three factors. They find that trade openness results in poverty reduction when financial sector, education and governance is stronger. Le Goff and Singh (2014) point out the issue of possible endogeneity of most of the explanatory variables and to deal with this challenge, they use System Generalized Method of Moment (GMM) on 5 years-averaged data. Similarly, Santos- Paulino (2017) also working on developing countries examines whether the impact of trade openness on poverty depends on other factors or not by including interaction terms in the regression and choosing the GMM estimation. She also looks at different export compositions as agricultural versus manufacturing. Her finding is that manufacturing exports contribute to poverty reduction in developing countries while for low income countries agriculture exports have a more significant impact. Like Le Goff and Singh (2014) Santos- Paulino (2017) does not present any other estimation results except GMM.

As Le Goff and Singh (2014) underline the significance of the complementary policies, the *nature of export product* might also affect the impact of trade openness on poverty which motivated this study to investigate further. Putting it differently, whether trade openness will show a pro-poor effect or not may depend on the nature of export products. Regarding the measures of the export nature or export quality, there are two main contributions made. Firstly, Hausmann, Hwang and Rodrik (2005) made a great contribution to the literature by introducing an index measuring the nature and quality of the export products predicting a particular growth path accordingly for a given country. The initial motivation behind this index is that different export products are associated with different economic performances or different productivity

levels. The index generates two terms: associated income/productivity level that is called PRODY and the income/productivity level that corresponds to a country's export basket that is called EXPY and thus EXPY is the measure of the productivity level associated with a country's specialization pattern. The index suggests that EXPY is a strong and robust predictor of subsequent economic growth. Similar contribution has been made by Hausmann, Hidalgo, Bustos, Coscia, Chung, Jimenez, Simoes, Yıldırım (2014) introducing the *ATLAS economic complexity index* suggesting that an economy needs to export more complex products as there is a strong correlation between economic complexity and the income per capita. Authors also point out that there are some countries which have greater economic complexity given their income levels and those countries are expected to see greater economic growth than the countries whose income levels are greater for their economic complexity. Despite the great contributions of these studies in terms of the deep analysis of the export product nature, their main focus is growth rather than poverty. Regarding the nature of export products, the literature mainly focuses on the impact of export product nature on growth rather than poverty. (Cuaresma and Wörz, 2005; Augustin Kwasi Fosu, 1990; David Greenaway, Wyn Morgan and Peter Wright, 1999) In this sense, the study of Santos- Paulino (2017) is rare as she make the differentiation between agriculture and manufacture export and she directly studies the impact of trade openness on poverty rather than growth.

The nature of export products can be referred as the different export compositions based on sectoral differences that can theoretically be linked with the given country's comparative advantage such as the natural resources or horticultural products or in line with the Heckscher-Ohlin model it can as well be referred as the products that require less skilled labor as in case of LDCs, such as low-technology intensive products versus high-technology intensive products. In the literature, the main focus has been given to different sectoral compositions of the export products. Cuaresma and Wörz (2005) focus on the export sectors with different technological intensities. They classified the export industries according to their corresponding technological intensities as low-tech or high-tech. Fosu (1990) on the other hand refers to the manufacturing exports versus primary sector exports and Greenaway, Morgan and Wright (1999) refer to disaggregated export products such as fuel, food, metals, other primary, machinery, textiles, and other manufactures. While they do have different sample countries as well as different methodologies they all find out that not only the export volume but export product component matters too in explaining the growth. Different export product compositions such as agricultural versus manufacturing or high technology-intensive versus low technology-intensive products

concern the *content* of the export product or putting it differently *what* the export product is. On the other hand, the nature of export product can also be referred as the degree of *product concentration*; whether a country's export products are highly concentrated on a few products or it is more evenly distributed over the broader range of products which does not concern the content of the export product. Herfindahl-Hirschmann Index (Product HHI) is a measure of the degree of product concentration with a value close to 1 indicating exports that are highly concentrated on a few products. The experience of Least Developed Countries such as Bangladesh, Myanmar and Nepal which had adopted export-oriented policies in the late 1980s initially showed a rapid rate of export growth. However, due to the high dependency on a narrow group of export products, these countries experienced a slower and even a declined rate of export growth (United Nations, 2004). Hamid (2010) investigating how trade pattern and instability has changed over time by examining the geographic and commodity concentration in Malaysia from 1970 to 2003 found out that commodity concentration appears as a significant variable in explaining the instability of export earnings in Malaysia. To best of our knowledge, in the literature there is not any study so far that studied the impact of trade openness on poverty in developing countries taking into account the nature of export product by referring to both export product composition as well as the export product concentration.

The couple of main points from the literature review are that the Neo-Liberal views suggesting trade openness to be pro-poor is not always backed up by the empirical evidences; unless growth led by trade openness worsens the inequality, trade openness through growth is likely to be pro-poor; however the literature still has mixed empirical evidence about the impact of trade openness on poverty in developing countries which motivated some studies to go beyond and investigate the possible non-linear nature of poverty-trade openness relation and thus investigate whether this relation depend on other complementary factors or not by using the interaction terms in their model. (Le Goff and Singh, 2014; Santos- Paulino, 2017) While the literature investigating the impact of trade openness on poverty is broad, there is still far less focus on the possible non-linear nature of the trade openness and poverty relation. Furthermore, while the export composition has been referred as an indicator of the export product nature, there is far less focus on the export product concentration as an indicator of the export product nature and despite the studies investigating the export product nature, the literature has the main focus on growth rather than poverty. Thus the literature review reveals the further need for studies examining the impact of trade openness on poverty, taking into

account the different export product natures such as different *export product composition* as well as *export product concentration*.

SECTION III.
DATA AND METHODOLOGY

A. DATA

Using cross-country and time-series data for 41 developing countries[1] from 1995 to 2016, this paper investigates whether the impact of trade openness on poverty depends on the *nature of export products* or not in developing economies. Restricting the sample set to developing countries eliminates the unwanted heterogeneity that might occur due to different nature of advanced and developing economies. The sample countries are provided in Appendix 1. Due to the missing data the dataset is averaged over 3 years period. The reason why this paper prefers to use 3 years averaged data instead of 5 years averaged data despite its widespread use in the literature is to avoid having only 4 time periods in econometric analysis of panel data and rather prefer 7 time periods. The missing data is not random as the least developed countries (LDC) tend to have greater number of missing observations than the rest of the developing countries. The number of developing countries studied in this paper are limited by the data availability. Summary statistics and the correlation tables can be found in Appendix 2. Table 2 shows the detailed description of the variables used and the data sources.

Table 2. Variable description and data sources

Variables	Description	Data sources
Poverty incidence	The percentage of the population living on less than $1.90 a day	World Bank Database
Poverty gap	The average shortfall of the poor with respect to the poverty line, multiplied by headcount ratio	World Bank Database
Trade openness	Sum of exports and imports as a share of GDP	World Bank Database
Inflation	Annual percentage change in consumer prices	World Bank Database
Private Credit/GDP	Domestic credit to private sector (%of GDP)	World Bank Database

[1] According to the 2009 WDI (page xxi), low-and middle-income economies are sometimes referred to as developing economies. The term is used for convenience; it is not intended to imply that all economies in the group are experiencing similar development or that other economies have reached a preferred or final stage of development.

Human capital	Human Development Index	United Nations Development Programme (UNDP)
High technology exports	High-technology exports (% of manufactured exports)	World Bank Database
Manufactures exports	Manufactures exports (% of merchandise exports)	World Bank Database
Agricultural raw materials export	Agricultural raw materials exports (% of merchandise exports)	World Bank Database
Concentration Index	Herfindahl-Hirschmann Index (Product HHI)	UNCTADstat database

B. METHODOLOGY

The empirical analysis of this paper has two parts[2]:

i. Investigating the impact of trade openness on poverty with a linear classical poverty model employing a set of control variables employed by similar studies in the literature.

ii. Investigating whether the impact of trade openness on poverty investigated in the previous part depends on the 'nature of export products' using a non-linear poverty model by employing four interaction terms between trade openness and 'export product nature'.[3] By export product nature this paper refers to a) *export product concentration index*, *b) share of manufactures exports*, *c) share of agricultural raw materials exports* and *d) share of high technology exports.*

For the first part, the model specification is as follows:[4]

$$\log(POV_{i,t}) = \beta_1 \log(TO_{i,t}) + \beta_2 \log(\chi_{i,t}) + \upsilon_i + \nu_t + \varepsilon_{i,t}$$

where $POV_{i,t}$ is the poverty incidence for country *i* at period *t*, $TO_{i,t}$ stands for the trade openness for country *i* at period *t* that is the main explanatory variable, $\chi_{i,t}$ stands for the set of

[2] The choice of method for the empirical analysis of this paper is similar to of Le Goff and Singh's (2014). The difference is that in part II of the empirical analysis instead of investigating the 'nature of export products' they investigate whether the impact of trade openness on poverty depends on factors as financial depth, education and governance or not by employing three interaction terms.

[3] The interaction terms are added to the regression one after another as in Le Goff and Singh (2014) and not simultaneously.

[4] Following the same approach from similar studies (Singh and Huangh, 2011; Le Goff and Singh, 2014) this paper does not employ a dynamic model mainly to make the results of this paper more comparable with of others.

control variables for country *i* at period *t*, ν_t is unobserved time effects, υ_i is country-specific effects and $\varepsilon_{i,t}$ is the error term.

Acknowledging that there are various ways of measuring poverty, this paper employs the most commonly used variable accounting for the poverty incidence as the dependent variable: *poverty headcount index* measuring the percentage of the population living below the poverty line. Choosing the most commonly used poverty indicator would also make the results of this study more comparable with other similar studies and thus see the value-added of this paper more clearly.

The main explanatory variable which is *trade openness* is referred as the sum of exports and imports as a share of GDP. Although trade policy measures such as tariffs or quotas can also be taken as an indicator of trade openness (Rodriguez & Rodrik, 1999; Harrison, 2007) trade policy measures are excluded from the analysis of this paper and the focus has been given to trade volume rather than policy measures as capturing the size of the trade policies (multiple trade agreements and multiple tariff rates) seemed to be more difficult and less concrete than measuring trade volume. Following the literature, this paper employs a similar set of control variables that have been used by similar studies (Dollar, Kleineberg and Kraaj, 2016; Le Goff and Singh, 2014; Singh and Huang, 2011): *inflation* to control for the macroeconomic environment; *Human Development Index (HDI)*[5] as a proxy for human capital level; *Private credit/GDP* as a proxy for the financial development. HDI ranges from 0 to 1 where higher values of HDI refers to high level of human development. [6] The Human Development Index (HDI) is a summary measure of achievements in three key dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living.

For the second part, the model specification is as follows:

$$\log(POV_{i,t}) = \beta_1 \log(TO_{i,t}) + \beta_2 \log(EPN_{i,t}) + \beta_3 \log(TO_{i,t}) * \log(EPN_{i,t}) + \beta_4 \log(\chi_{i,t}) + \upsilon_i + \nu_t + \varepsilon_{i,t}$$

[5] The technical notes for *Human Development Index (HDI)) can be found at* http://hdr.undp.org/en/content/human-development-index-hdi

[6] HDI ranges from 0 to 1 where below 0.550 is referred as low human development; 0.550–0.699 referred as medium human development; 0.700–0.799 referred as high human development and 0.800 and above referred as very high human development.

where $\log(EPN_{i,t})$ stands for the *export product nature* . Sectoral composition of the export product is definitely one way of referring to it considering that the developing countries are more dependent on agriculture especially the LDCs compared to the developed economies.

Rather than only focusing on the sectoral composition of the export products as manufactures exports versus agriculture exports this paper aims to include other dimensions of the export product nature that might have explanatory power on the impact of trade openness on poverty such as the export product concentration a well[7]. In this way, while sectoral composition of the export products captures "what" the export product is, the export product concentration captures "how diversified" is the export basket of a given country. According to UNCTADSTAT database, the product concentration index in 2017 was 0.06 in developed economies while 0.09 in developing economies and 0.22 in LDCs. Figure 5 in Appendix 3 shows the correlation between export product concentration and the export compositions. Figure 6 in Appendix 3 compares these four export product nature variables in LDCs and the other developing countries.

Thus after the benchmark model , the following model specifications are estimated one after another where firstly the *export product concentration* is taken as an indicator of the export product nature, and then the *share* of *manufactures exports*, the *share of agricultural raw materials exports* and the *share of high technology exports*, respectively where $\log(epc_{i,t})$ stands for the export product concentration, $\log(man_{i,t})$ stands for the share of manufactures export, $\log(agr_{i,t})$ stands for the share of agricultural raw materials export and $\log(hte_{i,t})$ stands for the share of high-tech exports.

a. $\log(POV_{i,t}) = \beta_1 \log(TO_{i,t}) + \beta_2 \log(epc_{i,t}) + \beta_3 \log(TO_{i,t}) * \log(epc_{i,t}) + \beta_4 \log(\chi_{i,t}) + \upsilon_i + \nu_t + \varepsilon_{i,t}$

b. $\log(POV_{i,t}) = \beta_1 \log(TO_{i,t}) + \beta_2 \log(man_{i,t}) + \beta_3 \log(TO_{i,t}) * \log(man_{i,t}) + \beta_4 \log(\chi_{i,t}) + \upsilon_i + \nu_t + \varepsilon_{i,t}$

c. $\log(POV_{i,t}) = \beta_1 \log(TO_{i,t}) + \beta_2 \log(agr_{i,t}) + \beta_3 \log(TO_{i,t}) * \log(agr_{i,t}) + \beta_4 \log(\chi_{i,t}) + \upsilon_i + \nu_t + \varepsilon_{i,t}$

d. $\log(POV_{i,t}) = \beta_1 \log(TO_{i,t}) + \beta_2 \log(hte_{i,t}) + \beta_3 \log(TO_{i,t}) * \log(hte_{i,t}) + \beta_4 \log(\chi_{i,t}) + \upsilon_i + \nu_t + \varepsilon_{i,t}$

First, the *Concentration index*, also named as *Herfindahl-Hirschmann Index (Product HHI)* is used. The index is a measure of the degree of product concentration ranging from 0 to 1 where

[7] The calculation of the index can be found at
http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=120

1 indicates that exports are highly concentrated on a few products and 0 indicates that exports are more homogeneously distributed among various products. The interaction term between trade openness and the export concentration index will allow one to see whether the impact of trade openness on poverty differs or not when the export concentration is low meaning that the export basket of a given country is more diversified or the other way around. The interaction term between trade openness and the share of manufacture exports or the share of agricultural raw material exports will allow one to see whether the impact of trade openness on poverty differs based on sectors and lastly the interaction term between trade openness and the share of high technology exports will allow one to see whether the impact of trade openness on poverty differs according to the technology level of the export product which can also be linked with the productivity level of the export basket.

Previous studies investigating growth and trade openness point out the issue of the endogeneity problem stemming from the reverse causality between growth and trade openness (Ravallion, 2004). Similar issue of reverse causality between poverty and trade openness is also present when estimating the models described above. Moreover, there is likely to be reverse causality between poverty and other explanatory variables as well. Using valid and external instruments might be one way to tackle with this issue; however it is very difficult to find a valid instrument especially for the trade openness. To deal with the endogeneity issue, previous studies (Le Goff and Singh, 2014; Santos- Paulino, 2017) investigating poverty and trade openness use the system Generalized-Method-of-Moments estimator (GMM) presented by Arellano and Bond (1991) and Blundell and Bond (1998) which uses lagged differences as instruments for estimating equations in levels. To deal with the issue of endogeneity, this paper also uses the system-GMM estimator. However, while GMM is most likely to be the most appropriate approach in this sense since finding the right instruments can be very challenging as Ann Harrison (2007) pointed out, an important issue with GMM is that the results of GMM are very sensitive to particular specifications used and can change to great extent depending on these specifications and how one uses them and thus should be carried out very carefully otherwise the results might be misleading. For this reason this paper finds it crucial to present other estimation results other than the system-GMM such as the Fixed Effect and the Random Effect unlike Le Goff and Singh (2014) and Santos- Paulino (2017).

Despite the issue of the sensitivity of the results of GMM, there is another advantage of using GMM in this study. GMM is a suitable option for a dataset with small “T and large N” (Roodman, 2006). Although there is no clear cut on how small T should be, the dataset that is

being used for this study with 7 periods from 1995 to 2016 seems to suit the given condition compared to previous studies using the system GMM. On the other hand, the validity of the additional instruments in system GMM depends on the assumption that changes in the instrumenting variables are uncorrelated with the fixed effects. (Roodman, 2006). Running one-step system GMM, time dummies are included and all right-hand side variables in the models specified above have been treated as endogenous variables. Twice or more lagged levels of the regressors are used as instruments. The number of instruments has been kept less than or equal to the number of groups, as otherwise the Sargan test may be weak. The "collapse" command has been used in order to restrict the number of instruments. [8]

SECTION IV.

A. EMPIRICAL RESULTS

Before estimating system GMM in table 5, first Fixed Effect and Random Effect models are estimated in table 3 and table 4, respectively. Column (1) shows the results for the classical benchmark poverty model; column (2), (3), (4) and (5) shows the results with the interaction terms in all of the tables. The Hausman test is in favor of Fixed Effect model in all five specifications given in column (1), (2), (3), (4) and (5) . Testing for heteroscedasticity in fixed effect regression model with Modified Wald test showed that there is heteroscedasticity in all of the specifications and therefore the heteroscedasticity-robust standard errors have been used.

The positive and statistically significant coefficient of trade openness in the classical benchmark model given in column (1) shows that in a simple model with no interaction term, trade openness is actually associated with higher poverty. However, once the interaction terms are added the results become more telling than the benchmark model in the sense that it allows one to interpret the impact of greater trade openness on poverty when

i. The concentration of exports are high
ii. The share of manufactures exports are high
iii. The share of agricultural raw material exports are high
iv. The share of high tech exports are high

[8] Since in the standard, un-collapsed form each instrumenting variable generates one column for each time period and lag available to that time period, the number of instruments is quadratic in T. To limit the instrument count, one can collapse them. See section 3.2 of Roodman, (2006).

In column (2), the coefficient of the interaction term between trade openness and export concentration is positive and statistically significant meaning that when the export concentration is high, greater trade openness is associated with even greater poverty. This result is in line with the ATLAS economic complexity index (Hausmann, Hidalgo, Bustos, Coscia, Chung, Jimenez, Simoes, Yıldırım, 2014) emphasizing the importance of the export basket diversification. The coefficient of the interaction terms in column (3) and (4) are not found to be statistically significant meaning that the impact of trade openness on poverty does not vary depending on the share of manufactures or the share of agricultural raw material exports. On the other hand, when the share of high tech exports are high, trade openness seems to have poverty reducing impact as the coefficient of the interaction term between trade openness and high-tech exports is negative and statistically significant. The poverty worsening effect of greater trade at higher levels of export concentration and the poverty reducing effect of greater trade at higher share of high technology exports are illustrated with dark blue lines in Figure 1 and Figure 2.

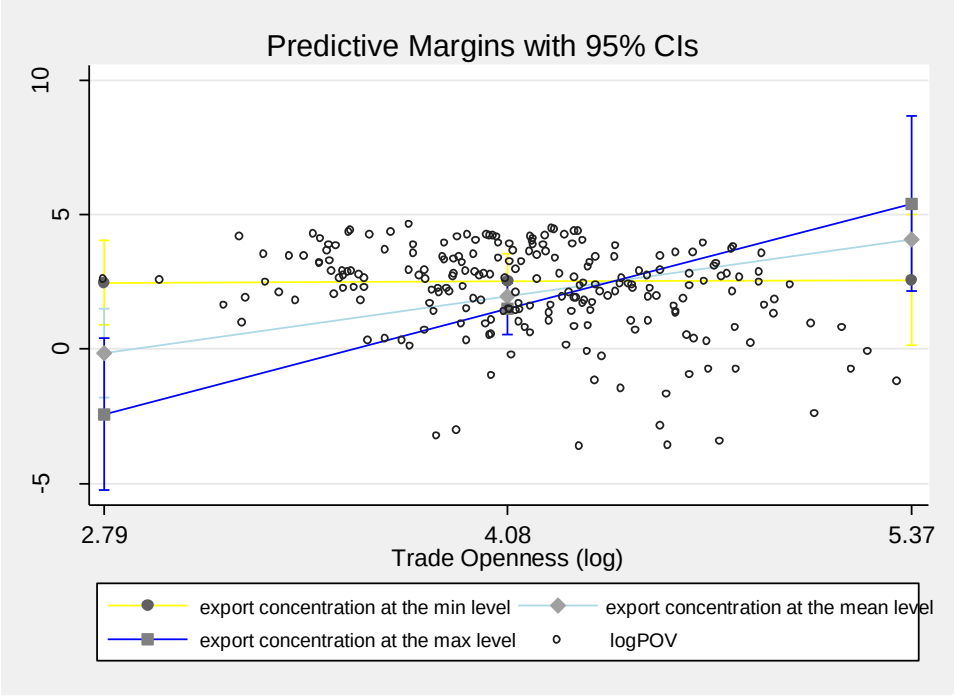

Figure 1. Trade openness and poverty relation given the minimum, mean and maximum level of export concentration index

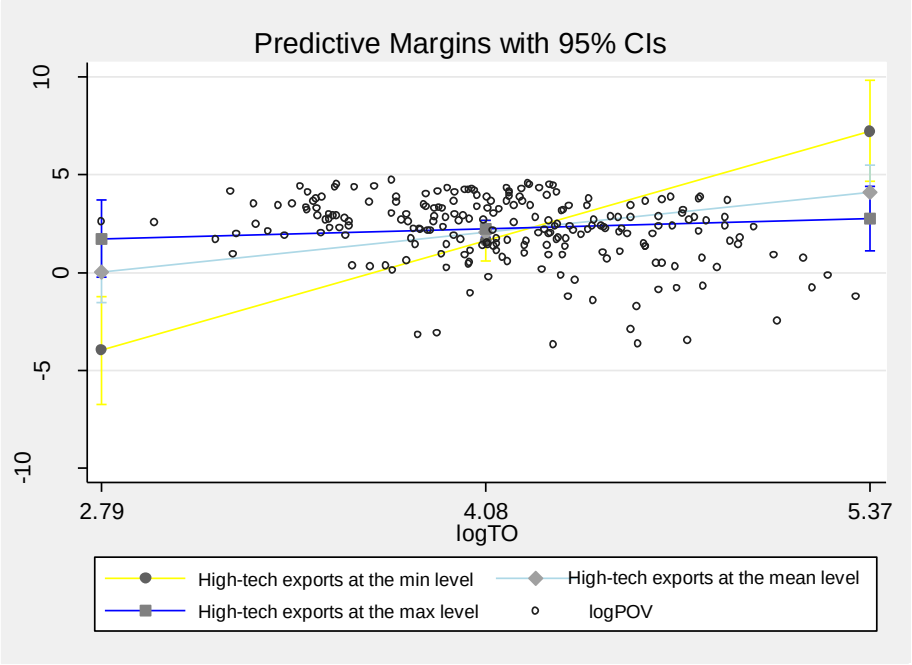

Figure 2. Trade openness and poverty relation given the minimum, mean and maximum share of high technology exports

Regarding the control variables, while inflation does not seem to be associated with poverty either negatively or positively in any of the model specifications, financial development and the human capital for all of the model specifications without exception seems to have strong poverty reducing effect as the coefficient of Private credit/GDP (log) and Human Development Index (HDI) (log) are both negative and statistically significant in all of the specifications. This robust and significant poverty reducing impact of human capital and financial development is in line with the findings of Le Goff and Singh (2014) where they took primary completion rate as an indicator of human capital and the ratio of private credit to GDP as an indicator of financial development. Previously poverty reducing effect of financial development was also confirmed by Singh and Huang (2011) although they do take the "financial liberalization index" too in addition to the ratio of private credit to GDP as an indicator of financial development.

Table 3. Fixed Effects

Dependent variable: Poverty headcount (log)	Benchmark Model	Interaction term with export concentration index	Interaction term with manufactures export	Interaction term with agricultural raw materials export	Interaction term with high technology export

VARIABLES	(1)	(2)	(3)	(4)	(5)
Trade openness (log)	1.450**	3.242**	1.050	0.937	2.102***
	(0.597)	(1.239)	(0.819)	(0.721)	(0.597)
Human Development Index(HDI) (log)	-5.124***	-5.735***	-5.506***	-4.581***	-5.997***
	(1.458)	(1.485)	(1.549)	(1.459)	(1.662)
Inflation(log)	0.0410	-0.0142	0.0416	0.0508	0.0371
	(0.0886)	(0.105)	(0.0816)	(0.0930)	(0.0849)
Private credit/GDP(log)	-0.970***	-0.957***	-0.901***	-0.831***	-0.928***
	(0.186)	(0.176)	(0.182)	(0.189)	(0.177)
Export Concentration Index (log)		-5.385**			
		(2.296)			
The interaction term Trade openness(log)* Export Concentration Index(log)		**1.217***			
		(0.605)			
Manufactures export (log)			-0.0158		
			(0.657)		
The interaction term Trade openness(log)* Manufactures export(log)			**0.103**		
			(0.174)		
Agricultural raw materials export(log)				-1.996	
				(1.478)	
The interaction term Trade openness(log)* Agricultural raw materials export(log)				**0.566**	
				(0.338)	
High technology export (log)					1.780***
					(0.522)
The interaction term Trade openness(log)* High technology export(log)					**-0.420*** **
					(0.123)
Constant	-3.530	-11.72**	-3.644	-1.856	-6.765**
	(2.700)	(5.322)	(3.607)	(3.042)	(2.916)
Observations	212	210	205	205	203
R-squared	0.519	0.556	0.543	0.577	0.550
Number of COUNTRY2	41	41	41	41	41
Time FE	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table4. Random Effects

Dependent variable: Poverty headcount (log)	Benchmark	Interaction term	Interaction term	Interaction term	Interaction term

VARIABLES	Model (1)	with export concentration index (2)	with manufactures export (3)	with agricultural raw materials export (4)	with high technology export (5)
Trade openness (log)	0.354	2.386**	0.532	-0.399	0.953**
	(0.361)	(1.000)	(0.613)	(0.457)	(0.401)
Human Development Index(HDI) (log)	-4.525***	-5.339***	-5.108***	-4.547***	-5.013***
	(0.778)	(0.863)	(0.856)	(0.805)	(0.883)
Inflation(log)	0.0272	-0.0450	0.0337	0.0435	0.0385
	(0.0901)	(0.0984)	(0.0859)	(0.0889)	(0.0888)
Private credit/GDP(log)	-0.728***	-0.743***	-0.702***	-0.615***	-0.676***
	(0.176)	(0.162)	(0.162)	(0.171)	(0.168)
Export Concentration Index (log)		-5.883***			
		(2.153)			
The interaction term Trade openness(log)* Export Concentration Index(log)		**1.314****			
		(0.558)			
Manufactures export (log)			0.523		
			(0.570)		
The interaction term Trade openness(log)* Manufactures export(log)			**-0.0382**		
			(0.146)		
Agricultural raw materials export(log)				-2.858**	
				(1.111)	
The interaction term Trade openness(log)* Agricultural raw materials export(log)				**0.738*****	
				(0.266)	
High technology export (log)					1.708***
					(0.484)
The interaction term Trade openness(log)* High technology export(log)					**-0.406*****
					(0.113)
Constant	0.493	-8.784**	-1.847	3.086	-2.377
	(1.773)	(4.300)	(2.739)	(2.074)	(2.027)
Observations	212	210	205	205	203
Number of COUNTRY2	41	41	41	41	41
Time FE	YES	YES	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The system GMM estimation results show that in the benchmark model, trade openness is actually worsening poverty which is in line with the result of the fixed effect model. The

estimation results for the model specifications with the interaction terms with export concentration and with the share of high technology exports in column (2) and (5) are also in line with the results of the fixed effect model; however here the interaction term between trade openness and the share of manufactures and the interaction term between trade openness and the share of agricultural raw material exports are also statistically significant which is in line with the findings of Santos- Paulino (2017) where she found out that manufacturing exports contribute to poverty reduction in developing countries. Furthermore, the GMM estimation results shows that like export product concentration, when the share of agricultural raw material exports is high, greater trade openness actually worsens poverty indicating that the effect of greater trade may not only bypass the poor but it may even harm the poor if the export product concentration or the share of agricultural raw material is high. Although not directly comparable since the main focus was the economic growth rather than poverty, previously Augustin Kwasi Fosu (1990) and David Greenaway, Wyn Morgan and Peter Wright (1999) found out a robust and positive impact of manufactures export on economic growth compared to other export product compositions which then possibly could benefit the poor unless it worsens the inequality as discussed earlier in this paper. Overall, the poverty worsening effect of greater trade when the export product concentration is high and the poverty reducing effect of greater trade when the share of high technology exports is high have been confirmed by the results of the GMM in addition to the results of the fixed effect and random effect and thus can be referred as robust findings while the results concerning the effect of greater trade on poverty depending on the share of manufactures export and the share of agricultural raw material exports are only confirmed by GMM results and thus may require more cautious interpretation.

Table 5. One-Step System GMM

Dependent variable: Poverty headcount (log)	Benchmark Model	Interaction term with export concentration index	Interaction term with manufactures export	Interaction term with agricultural raw materials export	Interaction term with high technology export
VARIABLES	(1)	(2)	(3)	(4)	(5)
Trade openness (log)	4.876***	13.67***	17.13***	2.661	11.58***
	(1.072)	(4.165)	(6.189)	(2.236)	(3.767)
Human Development Index(HDI) (log)	-12.89***	-9.919*	-6.801	-6.180	-1.240
	(2.946)	(5.179)	(8.543)	(4.113)	(4.441)
Inflation(log)	0.302	0.00784	-0.209	-0.103	-0.555
	(0.284)	(0.366)	(0.348)	(0.696)	(0.349)
Private credit/GDP(log)	-1.044***	-1.043**	-0.727*	0.128	-1.360**
	(0.307)	(0.422)	(0.405)	(0.811)	(0.566)

Export Concentration Index (log)		-28.68**			
		(12.24)			
The interaction term Trade openness(log)* Export Concentration Index(log)		**7.301****			
		(3.238)			
Manufactures export (log)			15.04**		
			(6.785)		
The interaction term Trade openness(log)* Manufactures export(log)			**-3.836****		
			(1.831)		
Agricultural raw materials export(log)				-7.777	
				(5.091)	
The interaction term Trade openness(log)* Agricultural raw materials export(log)				**2.192***	
				(1.189)	
High technology export (log)					12.56**
					(5.854)
The interaction term Trade openness(log)* High technology export(log)					**-3.222****
					(1.539)
Constant	-21.82***	-54.39***	-67.45***	-13.59	-40.21***
	(5.235)	(15.70)	(21.39)	(8.758)	(13.67)
Observations	212	210	205	205	203
Sargan	0.26	0.72	0.73	0.81	0.46
AR(2)	0.26	0.30	0.99	0.37	0.78
Number of instruments	17	17	17	17	17
Number of COUNTRY2	41	41	41	41	41
Time FE	YES	YES	YES	YES	YES

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Country dummies are not included in System GMM because if country dummies are added, the number of instruments are greater than the number of groups even when using the 'collapse' command. However, the suggested rule of thumb is to keep the number of instruments less than or equal to the number of groups. (Mileva, 2007)

B. CONCLUSION

This study examined whether the impact of trade openness on poverty depends on particular export product nature referred as the *export composition* as well as the *export concentration* in this study. Due to the endogeneity issue of the explanatory variables in the models specified in this paper, System GMM has been used as well as the fixed effect and random effect model. Despite the great promotion of trade openness by Neo-liberal views and despite the theoretical framework suggesting the pro-poor effect of trade liberalization, this

study found out that the so-called pro-poor impact of trade openness in developing countries depends strongly on the *export product nature*. The poverty worsening effect of greater trade when the export concentration is high and the poverty reducing effect of greater trade when the share of high-tech export is high have been confirmed by both fixed effect model and System GMM and thus these are the robust findings reached in this study. On the other hand, the poverty worsening effect of greater trade when the export concentration is high is not supported by the theoretical framework where specialization in products that the country is abundant in is theoretically assumed to benefit the poor in developing countries.

The key novelty revealed by this study is that while trade openness can benefit the poor, it can also harm the poor depending on the export product nature. Unless there is diversification in the export product basket, greater trade tend to harm the poor while if the share of high technology exports is high, greater trade tend to benefit the poor in developing countries. This implies the importance of more detailed and specific policy implications to address poverty in developing countries rather than only putting forward trade openness as a one-size solution for the poverty in developing countries.

Appendix 1.

Table 6.

List of countries included in the sample (41)	
Albania	Lao PDR*
Armenia	Madagascar*
Bangladesh*	Malaysia
Bolivia	Mexico
Brazil	Moldova
Burkina Faso*	Mongolia
Burundi*	Morocco
Cameroon	Mozambique*
China	Nepal*
Colombia	Pakistan
Dominican Republic	Paraguay
Ecuador	Peru
Egypt, Arab Rep.	Russian Federation
Gambia*	Senegal*
Georgia	Sri Lanka
Guinea*	Tunisia
Honduras	Uganda*

Indonesia	Ukraine
Kazakhstan	Vietnam
Kyrgyz Republic	Yemen, Rep.
	Zambia*

*Least Developed Countries (LDC)[9]

Appendix 2.

Table 7: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Poverty incidence	19.847	21.546	0	84.100	224
Poverty gap	7.285	9.875	0	50	224
Trade openness	70.425	33.169	16.399	215.823	287
Export Concentration Index	0.305	0.165	0.072	0.842	285
High technology export	7.713	9.971	0.005	58.145	274
Manufactures export	38.927	27.42	0.309	94.667	277
Agricultural raw materials export	5.341	10.188	0.144	75.645	277
Human Development Index(HDI)	0.588	0.13	0.249	0.808	284
Private credit/GDP	31.126	27.42	1.773	147.552	284
Inflation	10.176	14.715	-0.609	157.671	280

Table 8: Cross-correlation table

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Poverty incidence (1)	1.0000									
Poverty gap (2)	0.9609 (0.0000)	1.0000								
Trade openness (3)	-0.2459 (0.0002)	-0.2214 (0.0008)	1.0000							
Export Concentration Index (4)	0.3675 (0.0000)	0.3863 (0.0000)	-0.1270 (0.0320)	1.0000						
High technology export (5)	-0.1735 (0.0108)	-0.1384 (0.0427)	0.3807 (0.0000)	-0.1948 (0.0012)	1.0000					

[9] The same estimations applied in this paper are also applied in a sample of LDCs listed in Appendix 1; however because the number of LDCs were found to be inadequate and the variation was low among the LDCs the paper does not demonstrate the results on that sub sample.

Manufactures export (6)	-0.2667	-0.3292	0.0634	-0.6494	0.1764	1.0000				
	(0.0001)	(0.0000)	(0.2928)	(0.0000)	(0.0034)					
Agricultural Raw materials export (7)	0.3285	0.3025	-0.1319	0.2925	-0.0534	-0.2750	1.0000			
	(0.0000)	(0.0000)	(0.0281)	(0.0000)	(0.3788)	(0.0000)				
Human Development Index (HDI) (8)	-0.8443	-0.7715	0.2914	-0.4774	0.3072	0.3125	-0.3439	1.0000		
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)			
Private credit/GDP (9)	-0.3472	-0.3165	0.3847	-0.4149	0.5884	0.4658	-0.2053	0.4575	1.0000	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0006)	(0.0000)		
Inflation (10)	-0.0315	-0.0247	0.0044	-0.0009	-0.0925	-0.0568	-0.0689	-0.0005	-0.2346	1.0000
	(0.6413)	(0.7154)	(0.9410)	(0.9878)	(0.1315)	(0.3524)	(0.2591)	(0.9932)	(0.0001)	

Appendix 3.

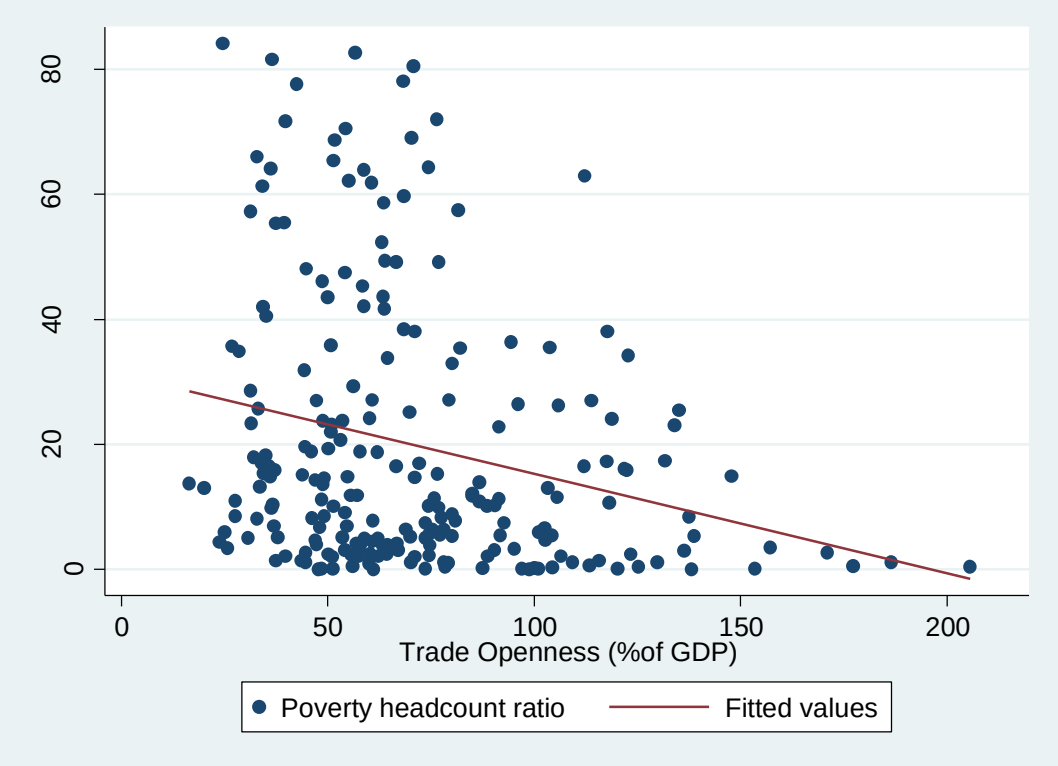

Figure 3. Correlation between trade and poverty

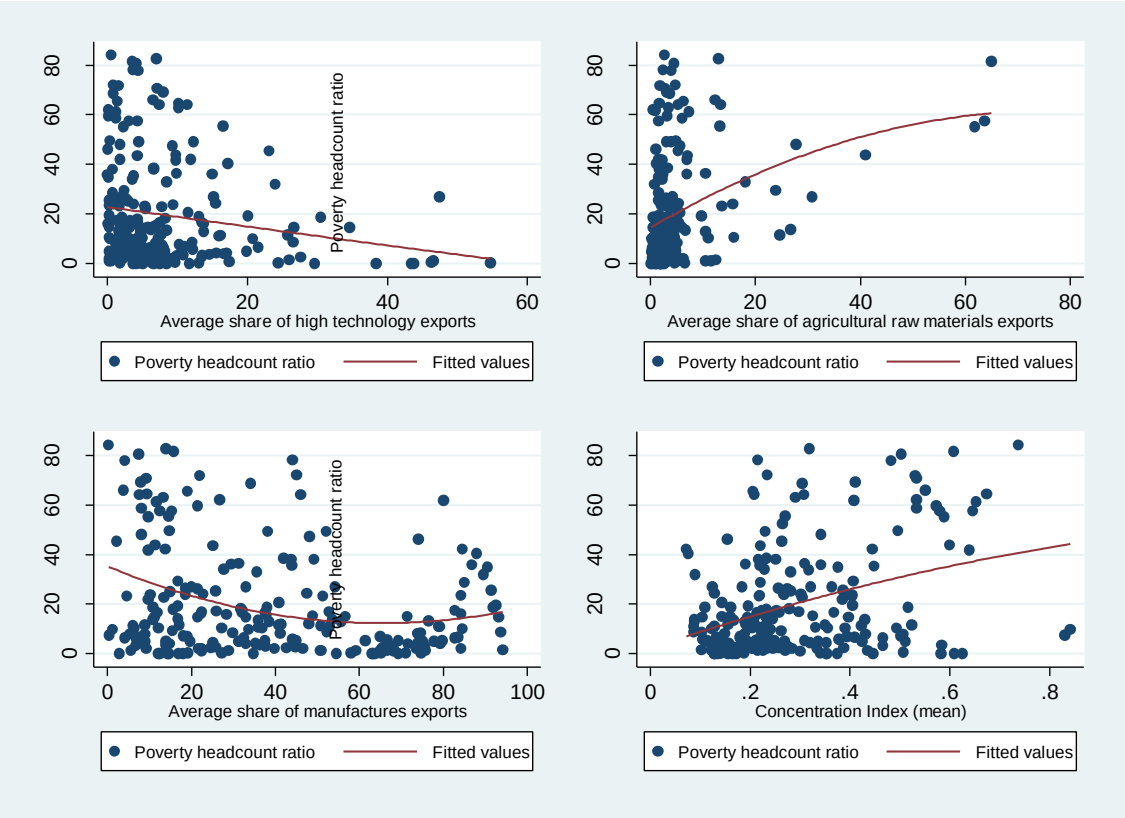

Figure 4. Correlation between poverty and export nature variables

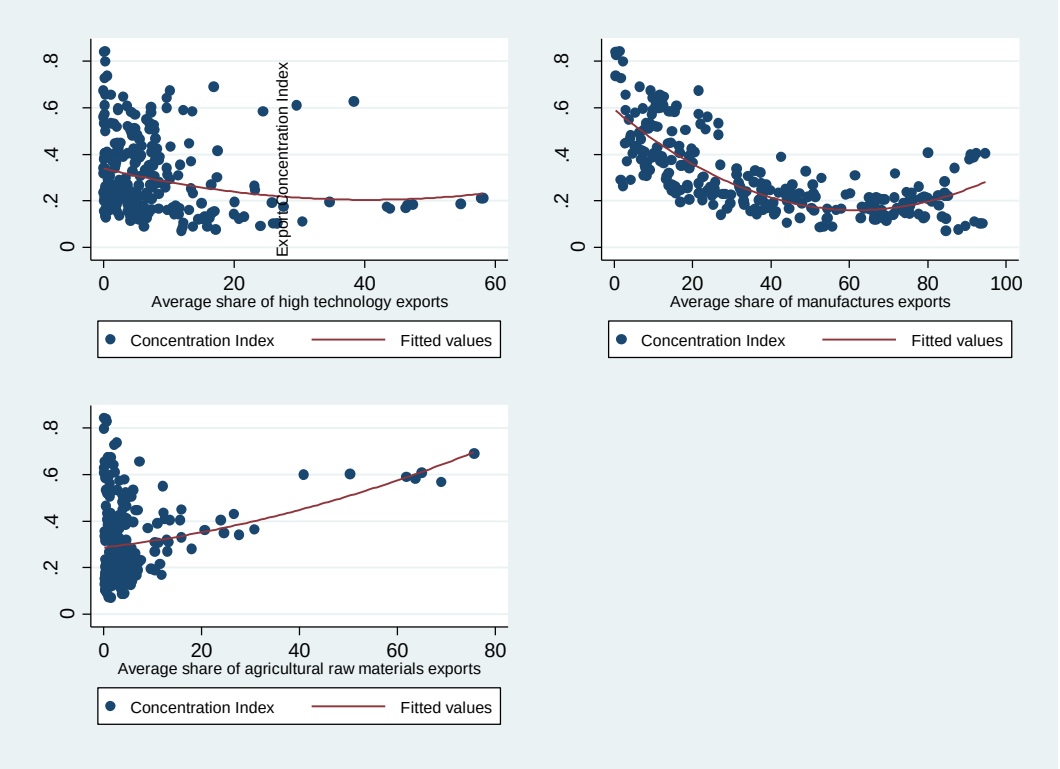

Figure 5. Correlation between export concentration and export compositons

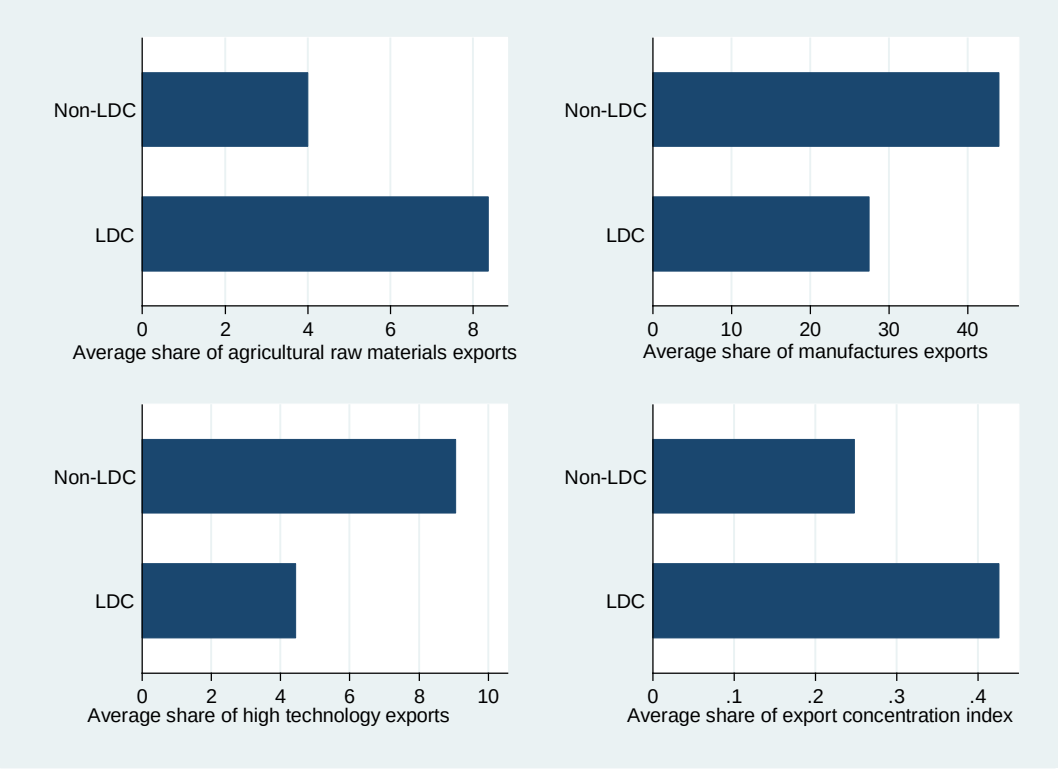

Figure 6. The nature of export products in LDCs and non-LDCs

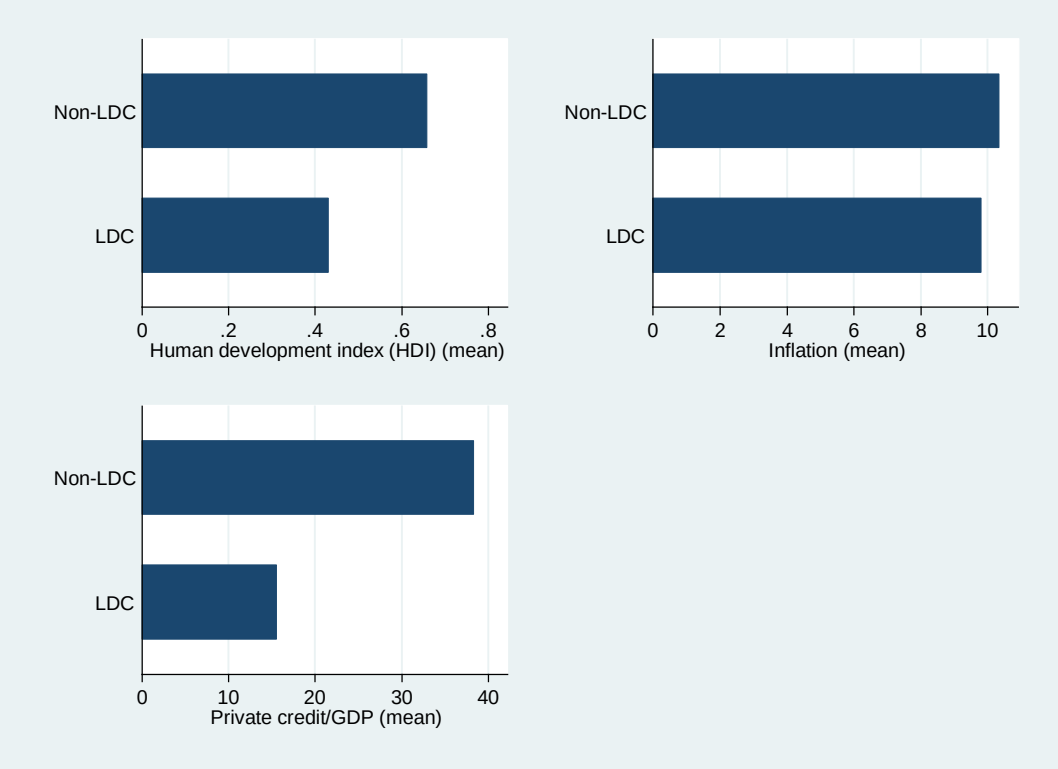

Figure 7. Control variables in LDCs and other developing countries

REFERENCES

1. Acemoglu, D., & Robinson, J. A. (2013). *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. New York: Crown Business.

2. Bayar, Y., & Sezgin, H. F. (2017). Trade Openness, Inequality and Poverty in Latin American Countries. *Ekonomika, 96*(1), 47. doi:10.15388/ekon.2017.1.10663

3. Cuaresma, J. C., & Wörz, J. (2005). On Export Composition and Growth. *Review of World Economies*, 1-17. doi:10.1007/s10290-005-0014-z

4. Davis, D. R., & Mishra, P. (2007). Stolper-Samuelson Is Dead. *Globalization and Poverty*,87-108. doi:10.7208/chicago/9780226318004.003.0003

5. Dollar, D., Kleineberg, T., & Kraay, A. (2016). Growth still is good for the poor. *European Economic Review, 81*, 68-85. doi:10.1016/j.euroecorev.2015.05.008

6. Fosu, A. K. (1990). Export composition and the impact of exports on economic growth of developing economies. *Economics Letters*,*34*(1), 67-71. doi:10.1016/0165-1765(90)90183-2

7. Frankel, J. A., & Romer, D. (1999). Does Trade Cause Growth? *American Economic Review, 89*(3), 379-399. doi:10.1257/aer.89.3.379

8. Goff, M. L., & Singh, R. J. (2014). Does trade reduce poverty? A view from Africa. Journal of African Trade, 1(1), 5-14. doi:10.1016/j.joat.2014.06.001

9. Greenaway, D., Morgan, W., & Wright, P. (1999). Exports, export composition and growth. *The Journal of International Trade & Economic Development,8*(1), 41-51. doi:10.1080/09638199900000004

10. Hamid, Z. (2010). Concentration of Exports and Patterns of Trade: A Time-Series Evidence of Malaysia. *The Journal of Developing Areas, 43*(2), 255-270. doi:10.1353/jda.0.0065

11. Harrison, A. (2007). Globalization and Poverty. *NBER Working Paper*. doi:10.3386/w12347

12. Hausmann, R., Hwang, J., & Rodrik, D. (2005). What You Export Matters. *NBER WORKING PAPER SERIES*. doi:10.3386/w11905

13. Hausmann, R., Hidalgo, C., Bustos, S., Coscia, M., Chung, S., Jimenez, J., Simoes, A., A. Yıldırım, M. (2014). *The atlas of economic complexity: Mapping paths to prosperity*. Cambridge MA: Puritan Press.

14. Heckscher, E. (1919). The Effect of Foreign Trade on the Distribution of Income. Ekonomisk Tidskrift, 497-512. Reprinted as Chapter 13 in A.E.A. (1949). Readings in the Theory of International Trade, 272-300 (Philadelphia: Blakiston) with a Translation in H. Flam and M. J. Flanders (Eds.). 1991. Heckscher-Ohlin Trade Theory, 43-69. Cambridge: MIT Press.

15. Heo, Y., & Doanh, N. K. (2009). Trade Liberalisation and Poverty Reduction in Vietnam. *World Economy, 32*(6), 934-964. doi:10.1111/j.1467-9701.2009.01183.x

16. Huang, Y., & Singh, R. J. (2011). Financial Deepening, Property Rights and Poverty: Evidence From Sub-Saharan Africa. *IMF Working Papers,11*(196), 1. doi:10.5089/9781462305230.001

17. Human Development Reports. Retrieved from http://hdr.undp.org/en/content/human-development-index-hdi

18. Krueger, A. O. (1983). *Trade and employment in developing countries. 3: Synthesis and conclusions*. Chicago: University of Chicago Press.

19. Larsen, E. R. (2006). Escaping the Resource Curse and the Dutch Disease?. *American Journal of Economics and Sociology,65*(3), 605-640. doi:10.1111/j.1536-7150.2006.00476.x

20. Mileva, E. (2007) Using Arellano – Bond Dynamic Panel GMM Estimators in Stata. Retrieved from https://www.researchgate.net/file.PostFileLoader.html?id=575fcb0a217e200cb31d2f1f&assetKey=AS:372807700631552@1465895690276

21. Ohlin, B. (1933). Interregional and International Trade. Cambridge: Harvard University Press.

22. Ravallion, M. (2004). Looking Beyond Averages in the Trade and Poverty Debate. *Policy Research Working Papers*. doi:10.1596/1813-9450-3461

23. Ricardo, D. (1817). *On the principles of political economy, and taxation*. London: J. Murray.

24. Rodríguez, F., & Rodrik, D. (1999). *Trade policy and economic growth: A skeptics guide to cross-national evidence*. Cambridge, MA: National Bureau of Economic Research.

25. Roodman, D. (2006). How to do Xtabond2: An Introduction to Difference and System GMM in Stata. *SSRN Electronic Journal*. doi:10.2139/ssrn.982943

26. Sachs, J. D., & Warner, A. M. (2001). The curse of natural resources. *European Economic Review,45*, 827-838.

27. Samuelson, P. A. (1948). International Trade and the Equalization of Factor Prices. Economic Journal 58, 163-84.

28. Samuelson, P. A. (1949). International Factor-Price Equalization Once Again. Economic Journal 59, 181-97.

29. Stolper, W. F., & Samuelson, P. A. (1941). Protection and real wages. *Review of Economic Studies* 9(1), 58-73

30. Santos-Paulino, A. U. (2017). Estimating the impact of trade specialization and trade policy on poverty in developing countries. *The Journal of International Trade & Economic Development,26*(6), 693-711. doi:10.1080/09638199.2017.1291710

31. UNCTAD (1999), *Trade and Development Report 1999*. United Nations, New York and Geneva.

32. UNCTADstat. Retrieved from http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx?ReportId=120

33. United Nations (2004), Export Diversification and Economic Growth: The Experience of Selected Least Developed Countries, *Economic and Social Commission for Asia and the Pacific Development Papers*,No. 24.

34. United Nations (2015), Transforming our World: The 2030 Agenda for Sustainable Development, A/RES/70/, https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20 Sustainable %20Development%20web.pdf

35. Winters, L. A. (2002). Trade Liberalisation and Poverty: What are the Links? *The World Economy, 25*(9), 1339-1367. doi:10.1111/1467-9701.00495

36. Winters, L. A., Mcculloch, N., & Mckay, A. (2004). Trade Liberalization and Poverty: The Evidence So Far. *Journal of Economic Literature,42*(1), 72-115. doi:10.1257/002205104773558056

37. World Bank (2004). Horticultural exports from developing countries. Agriculture Investment Sourcebook, http://www-esd.worldbank.org/ais/index.cfm?Page=mdisp&m=10&p=2; last visited on 12 June 2007.

38. World Bank Group and World Trade Organization (2015). The Role of Trade in Ending Poverty. World Trade Organization: Geneva.

39. World development indicators 2009. Retrieved from http://documents.worldbank.org/curated/en/886211468340850838/World-development-indicators-2009

Non-exclusive licence to reproduce thesis and make thesis public

I, Tuba Busra Özsoy (*author's name*)

(date of birth: 18.11.1992),

1. herewith grant the University of Tartu a free permit (non-exclusive licence) to:

1.1. reproduce, for the purpose of preservation and making available to the public, including for addition to the DSpace digital archives until expiry of the term of validity of the copyright, and

1.2. make available to the public via the web environment of the University of Tartu, including via the DSpace digital archives until expiry of the term of validity of the copyright,

THE LINK BETWEEN POVERTY AND TRADE OPENNESS DEPENDING ON THE EXPORT PRODUCT NATURE IN DEVELOPING COUNTRIES , (title of thesis)

Supervised by Priit Vahter, (supervisor's name)

2. I am aware of the fact that the author retains these rights.

3. I certify that granting the non-exclusive licence does not infringe the intellectual property rights or rights arising from the Personal Data Protection Act.

Tartu, **14.01.2019**